

FIG. 1

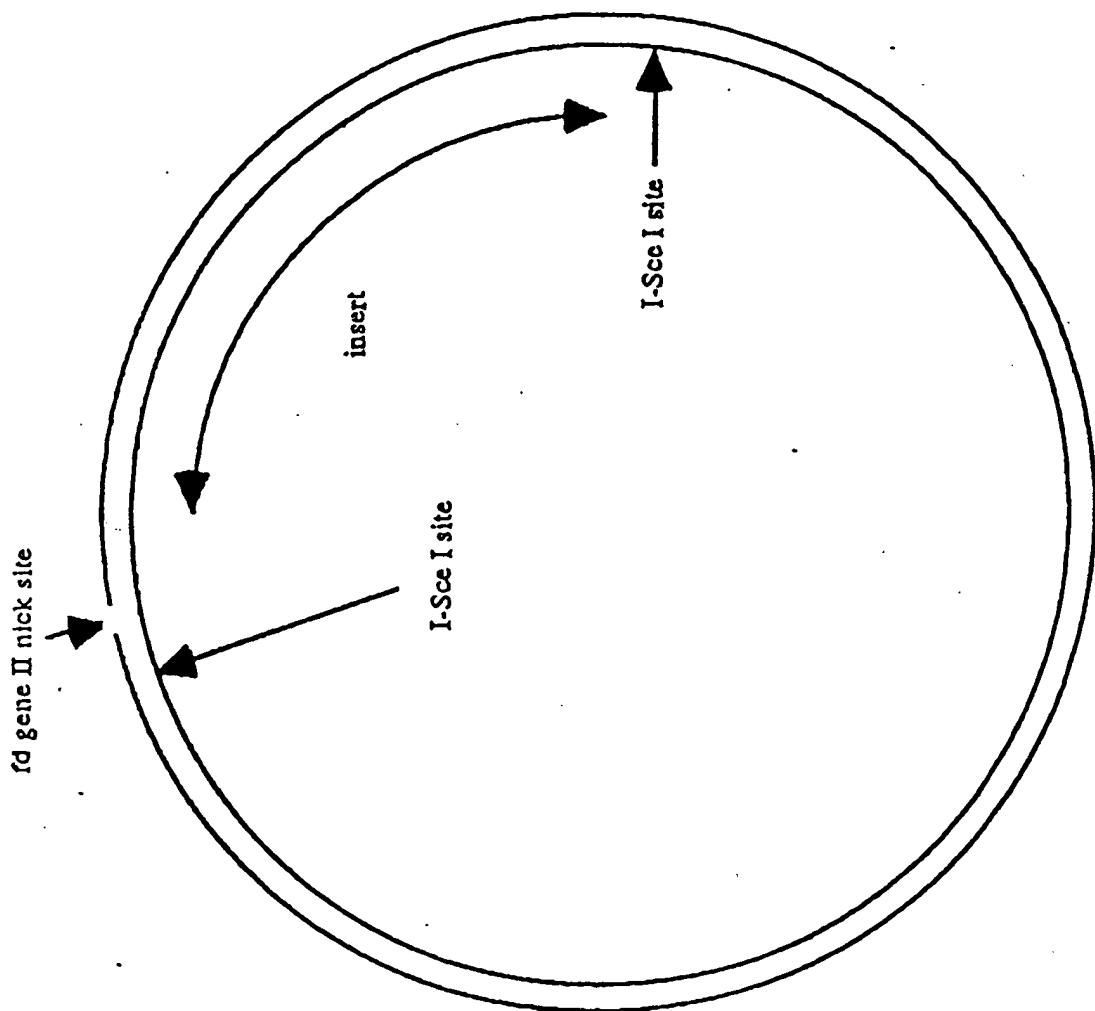


FIG. 2

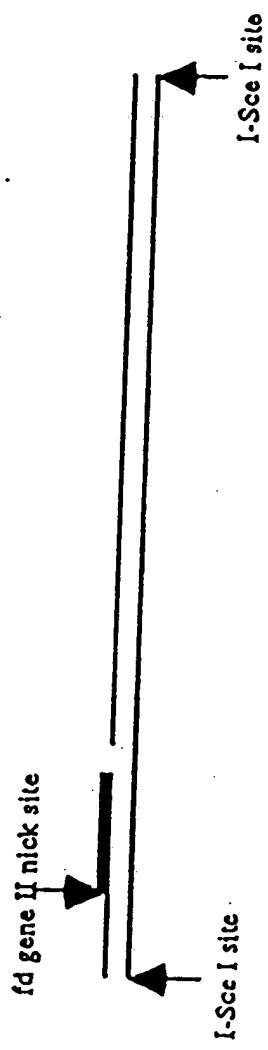
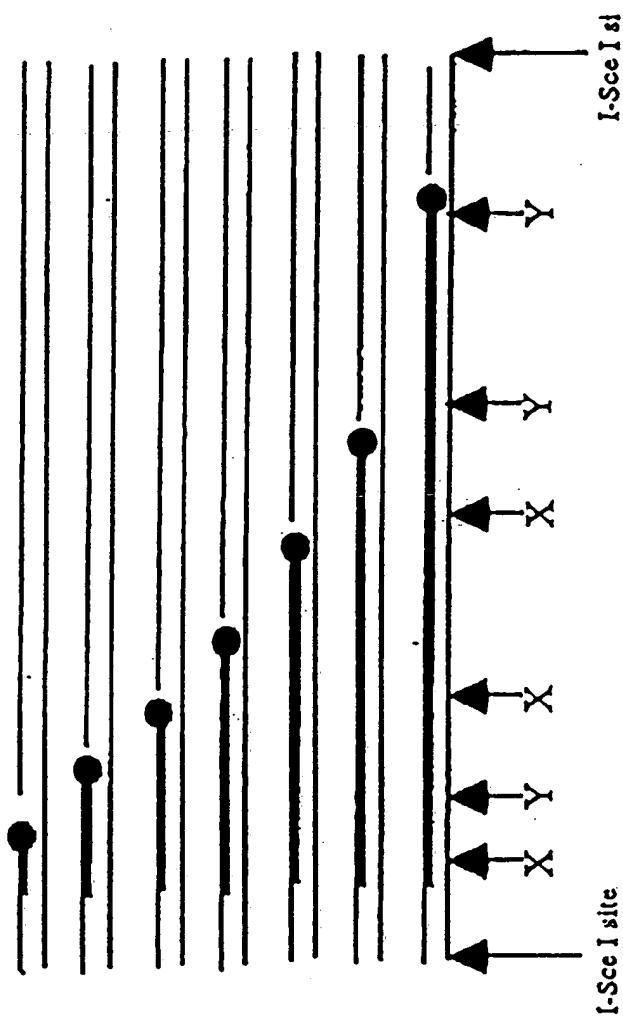


FIG. 3



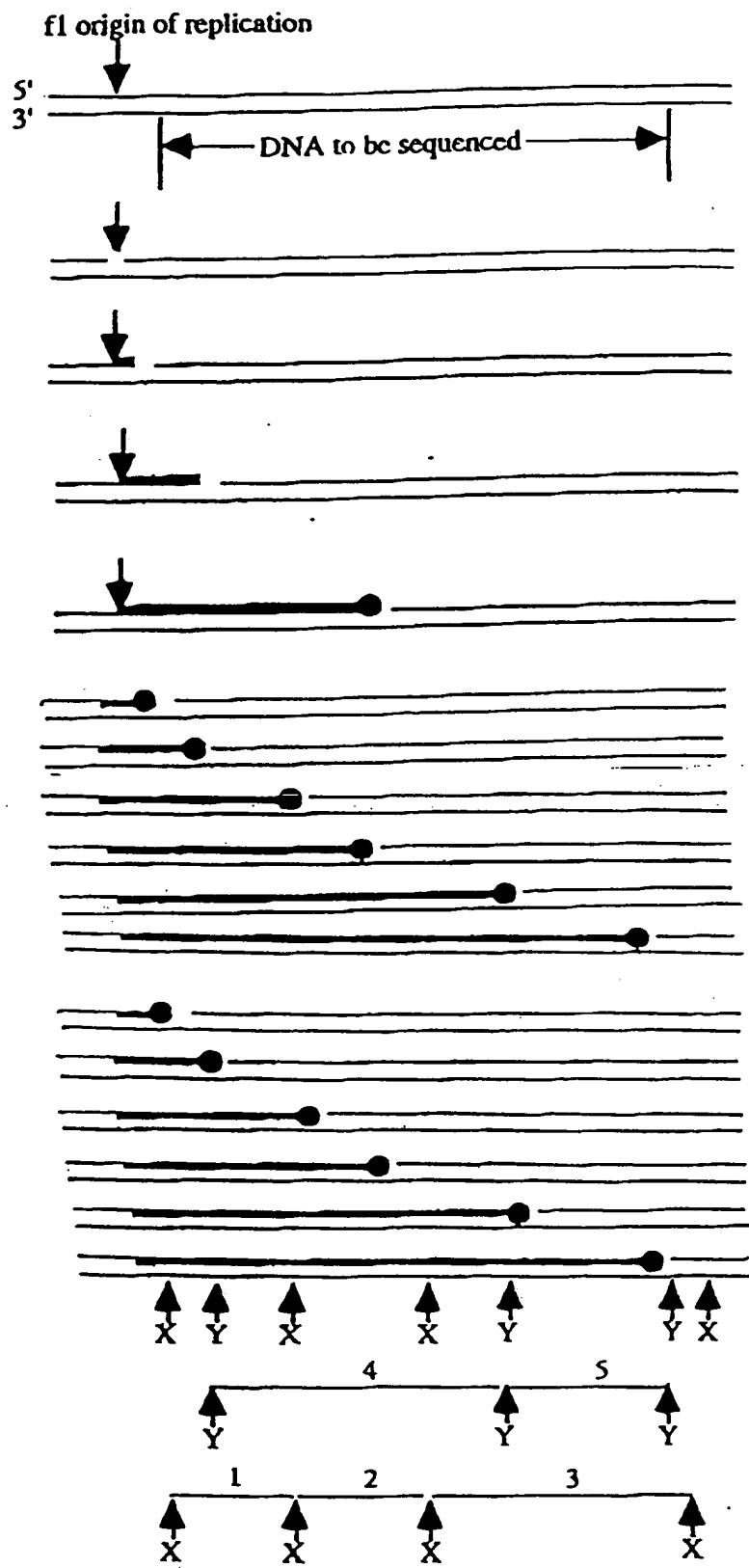


FIG. 4A

FIG. 4B

FIG. 4C

FIG. 4D

FIG. 4E

FIG. 4F

FIG. 4G

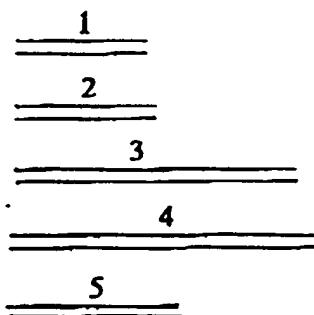


FIG. 4H

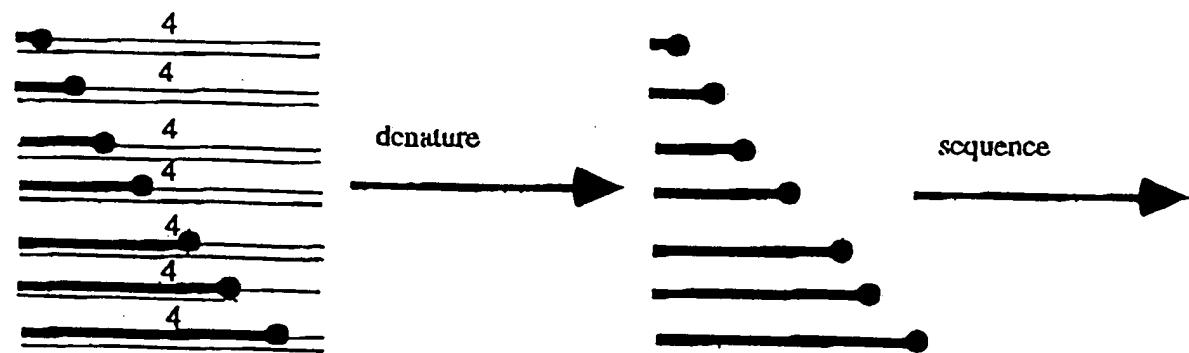


FIG. 4I

FIG. 5

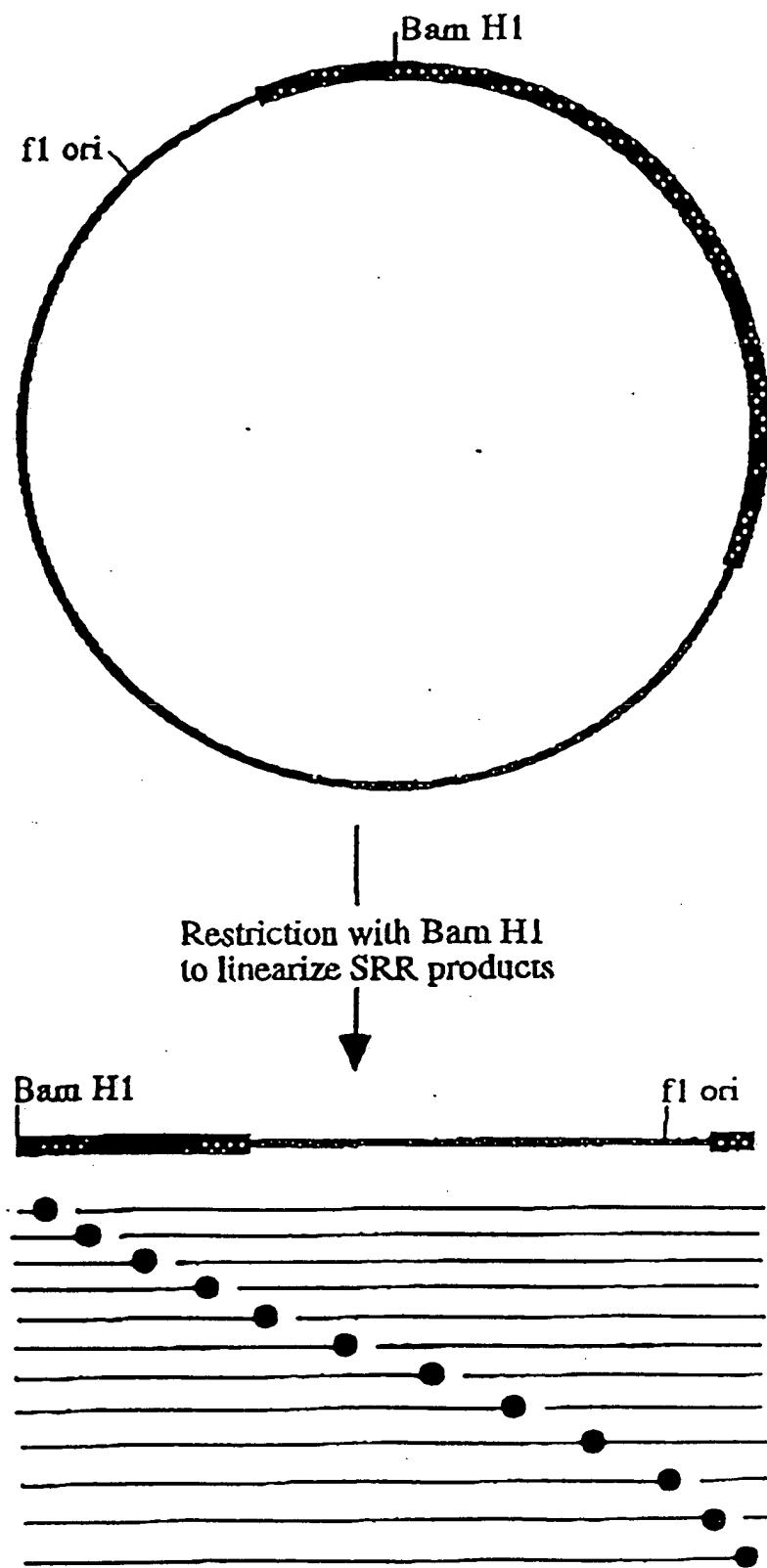


FIG. 6

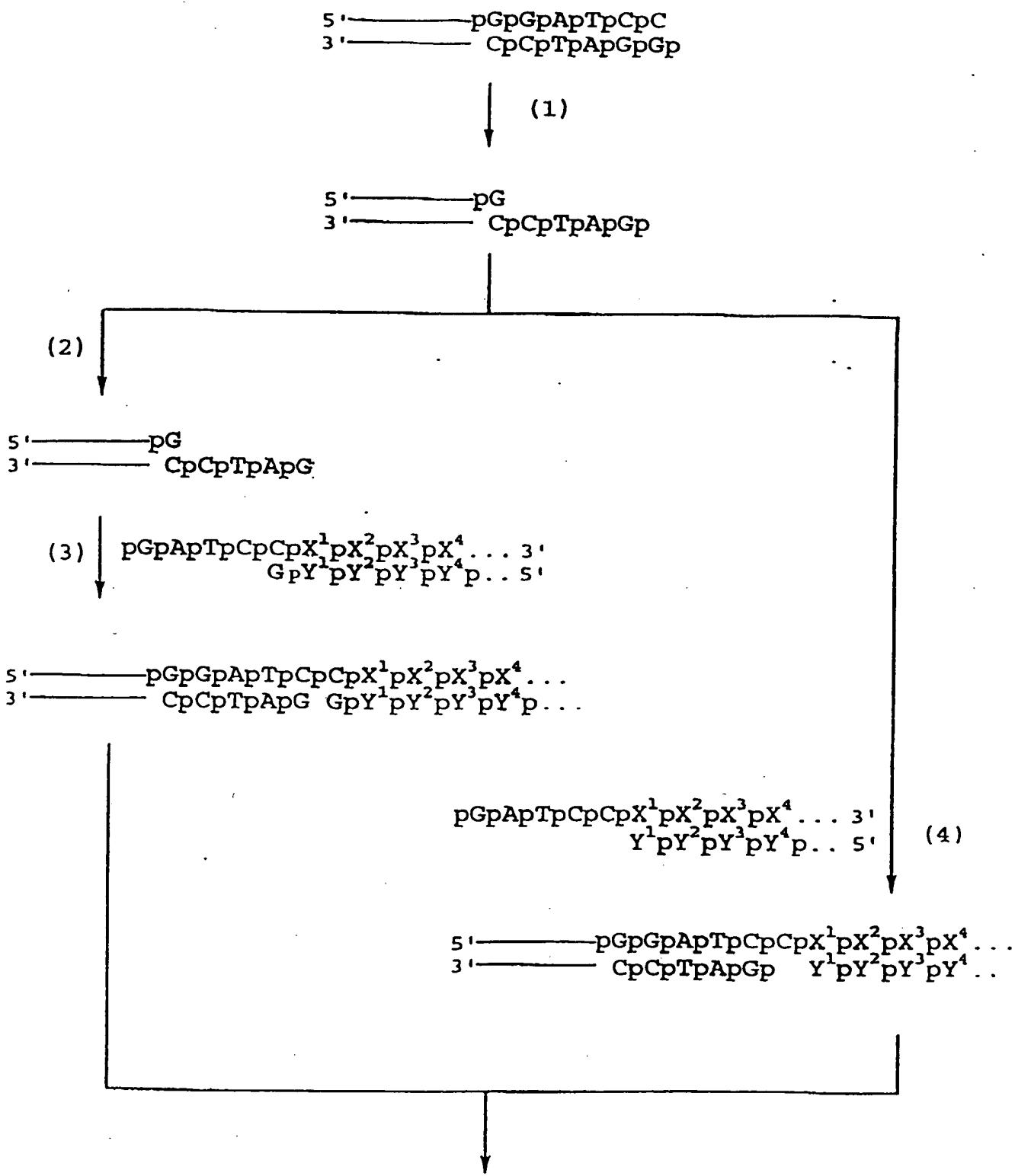


FIG. 7A

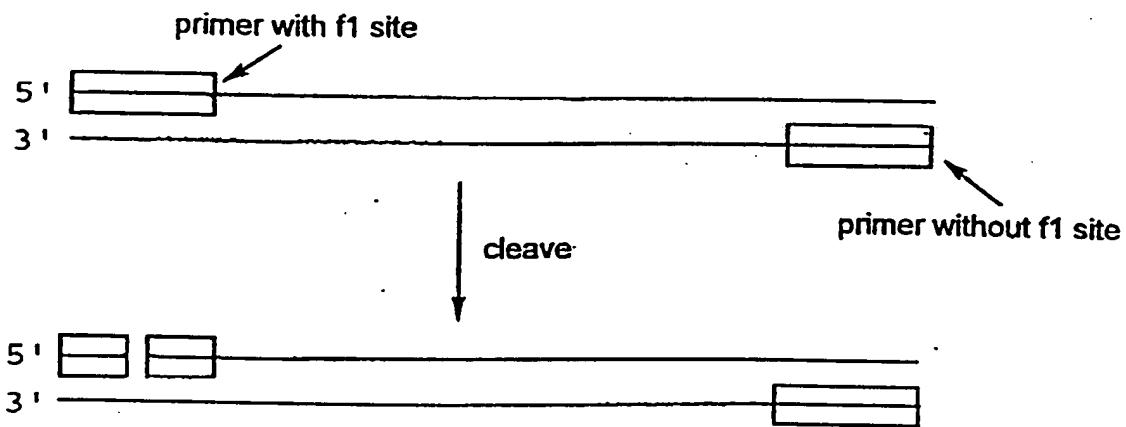


FIG. 7B

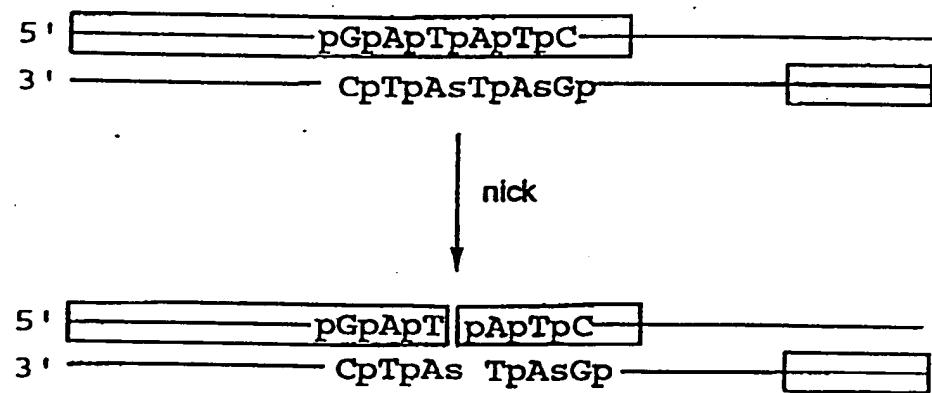


FIG. 7C

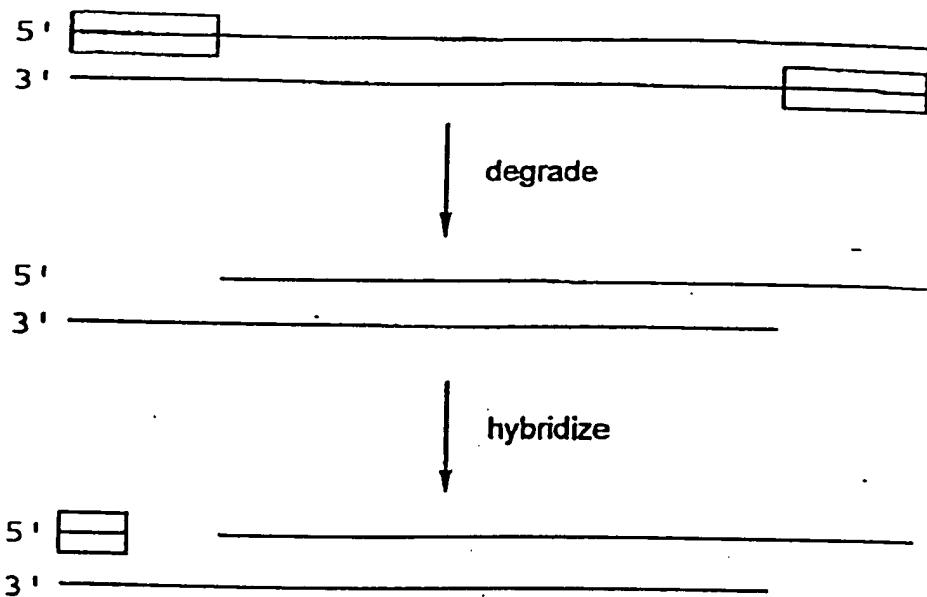
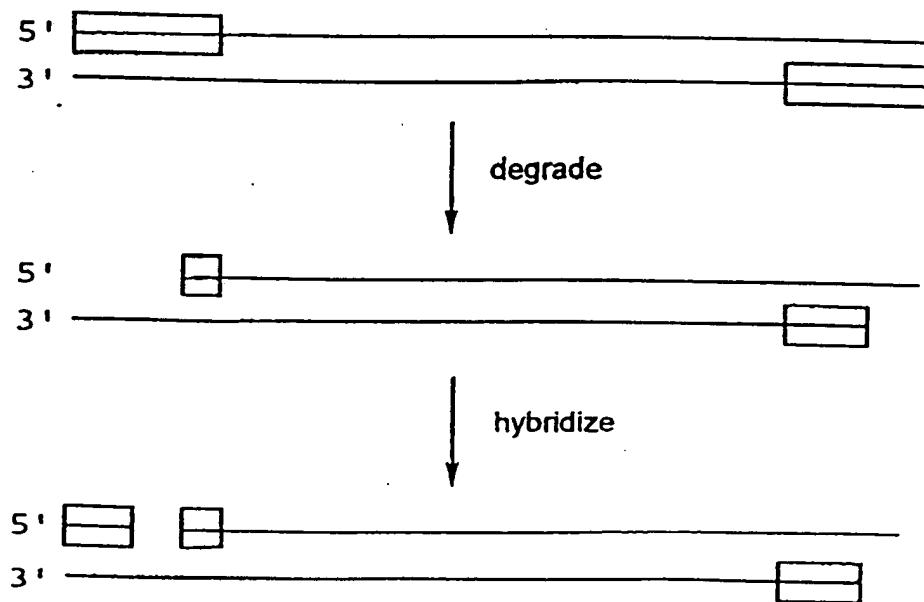


FIG. 7D



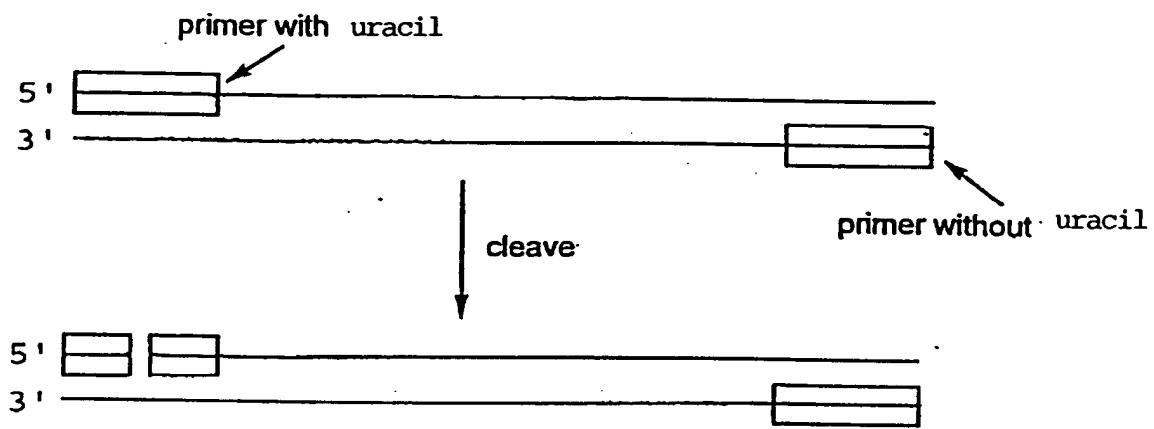


FIG. 7E

FIG. 8

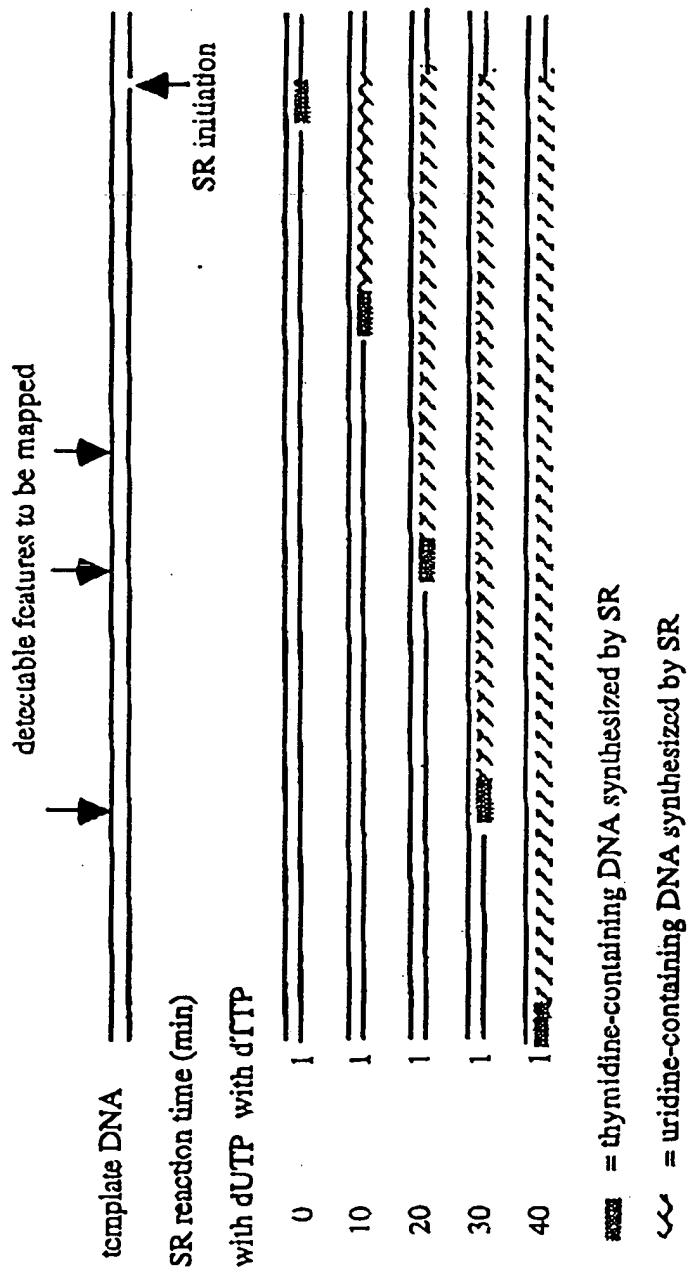
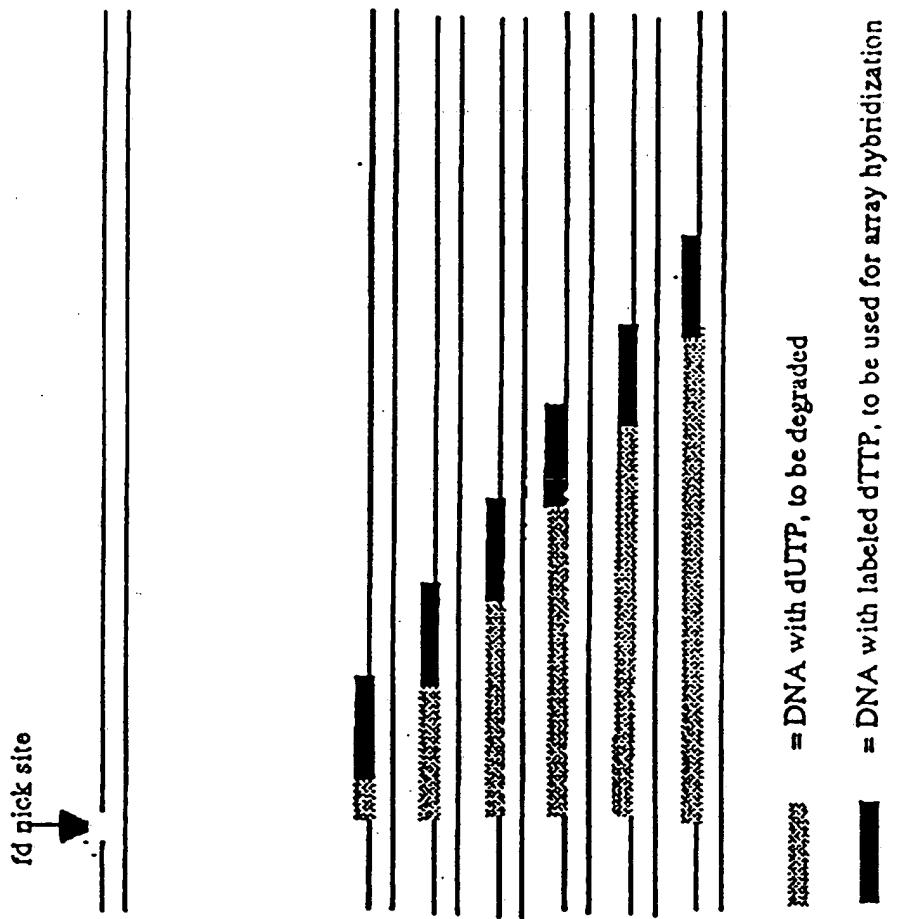


FIG. 9



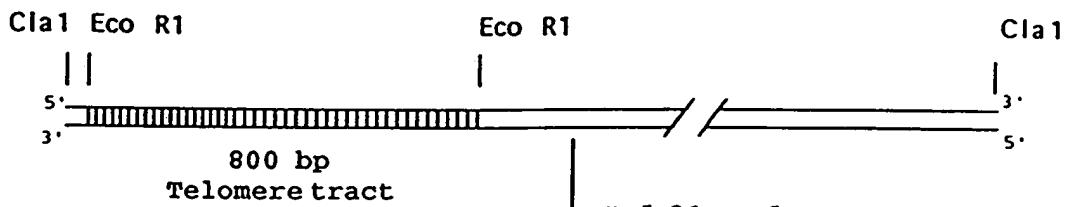


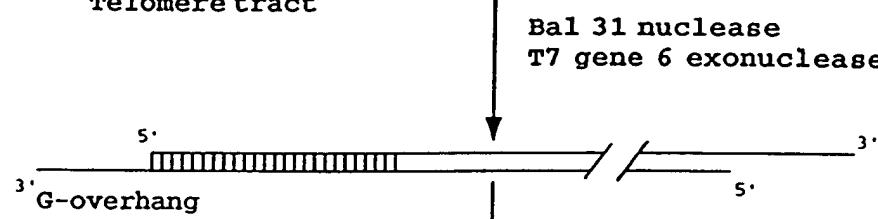
FIG. 10A

FIG. 10B

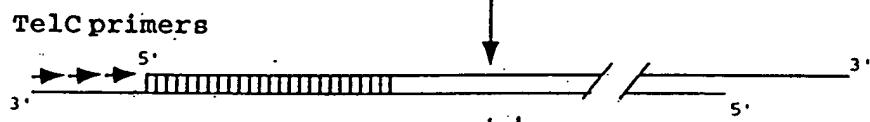
FIG. 10C

FIG. 10D

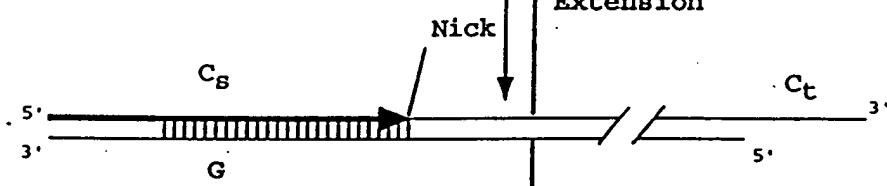
FIG. 10E



Primer Hybridization



dATP, dCTP, dTTP **Taq DNA Polymerase Extension**



dNTP

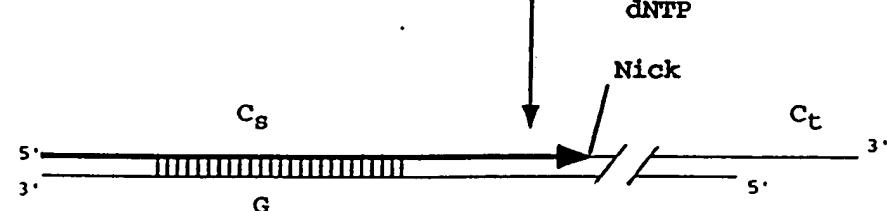


FIG. 11

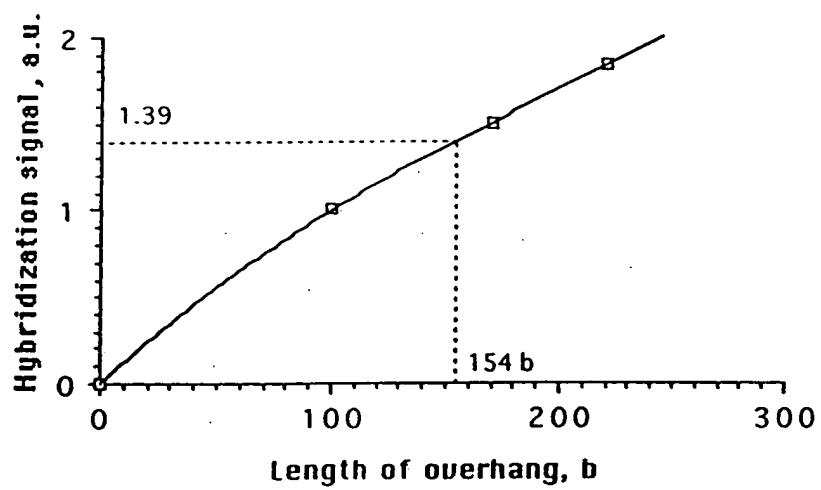


FIG. 12

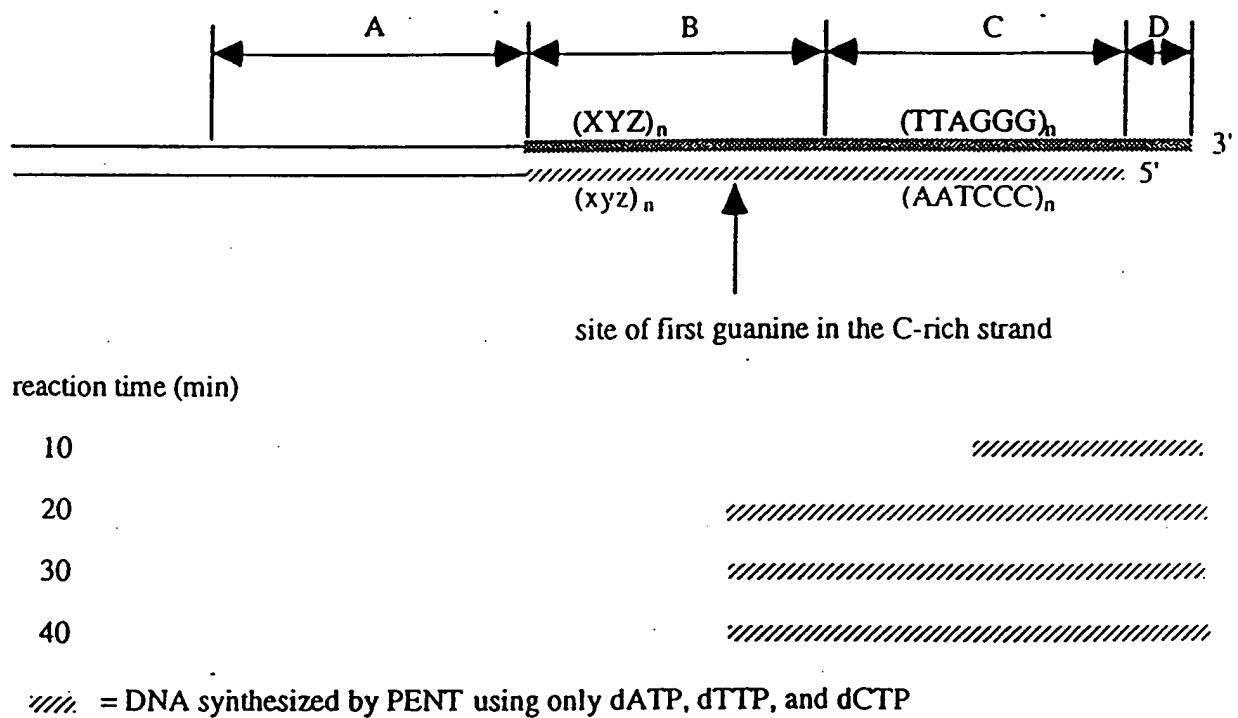


FIG. 13

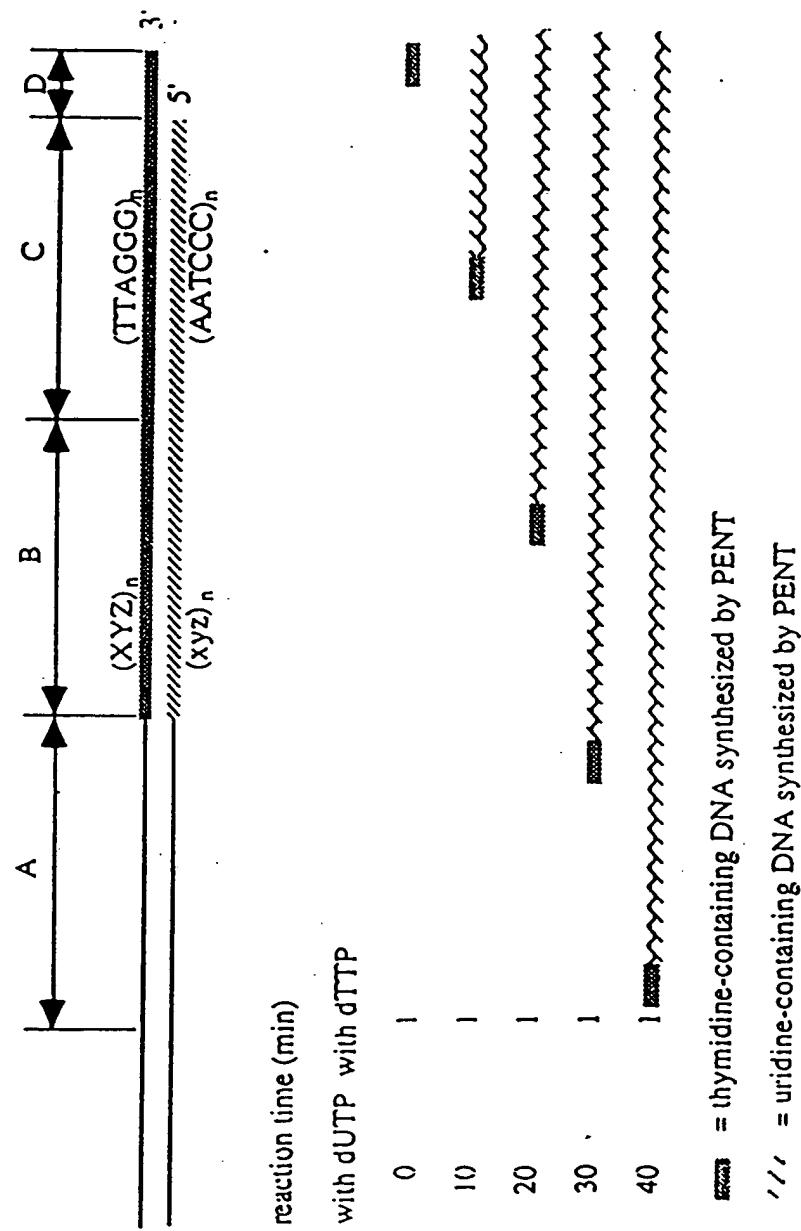


FIG. 14A

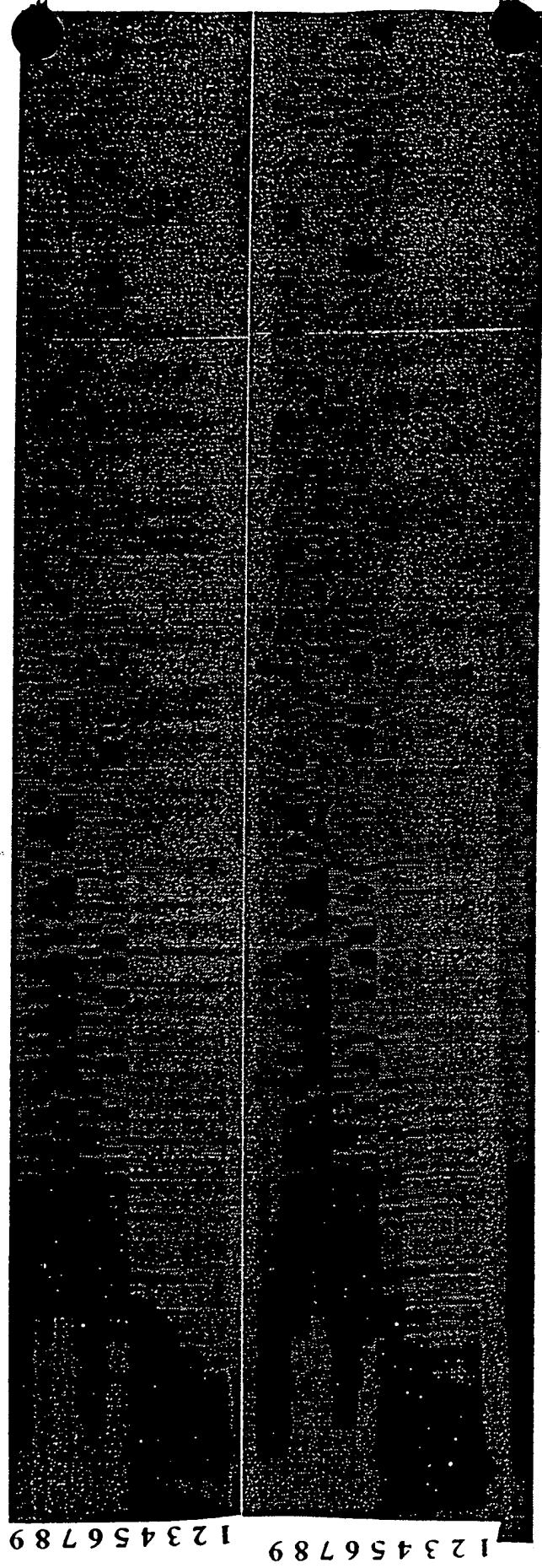


FIG. 14B

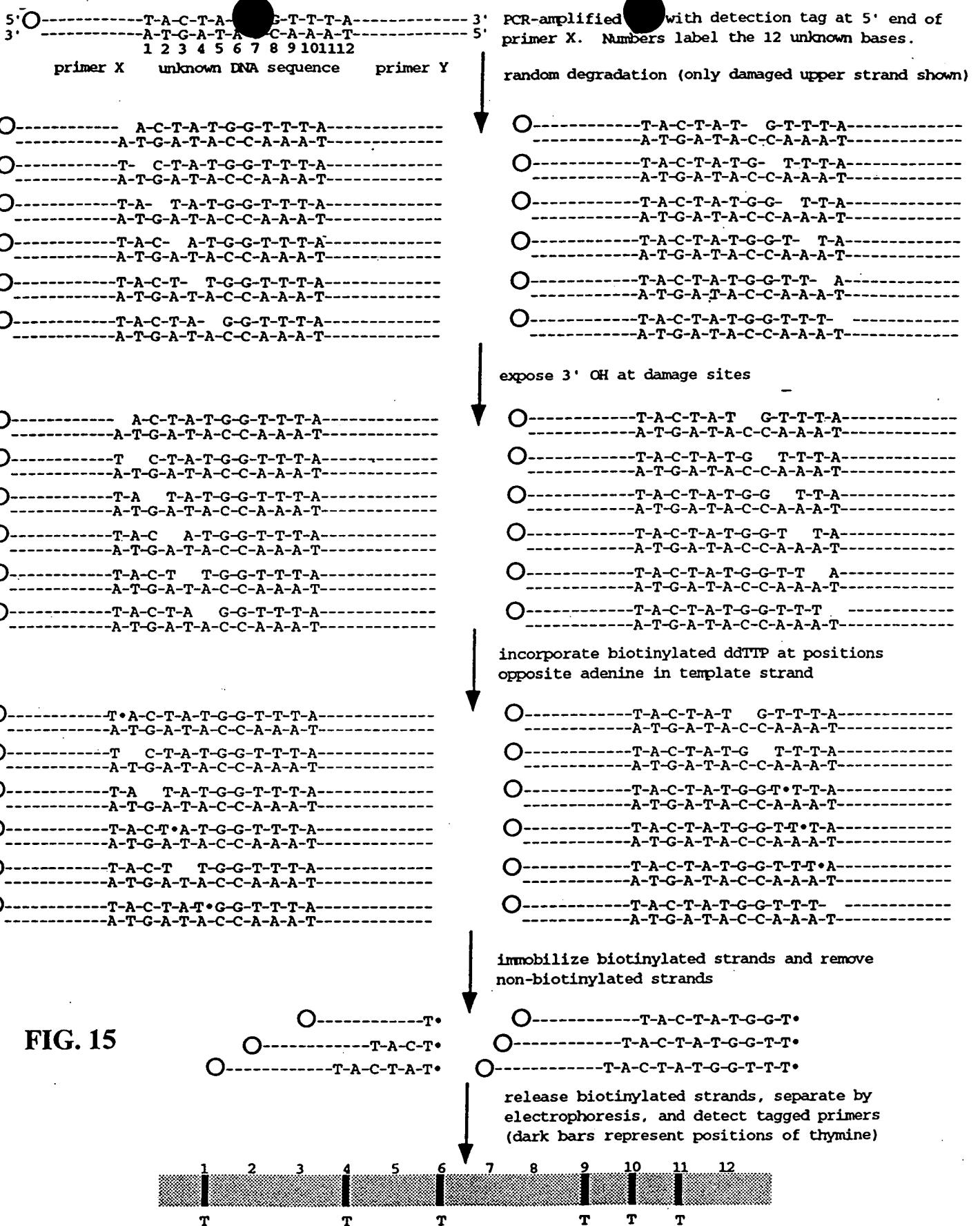
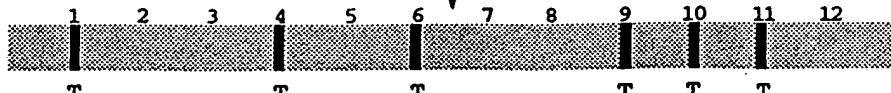
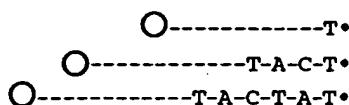
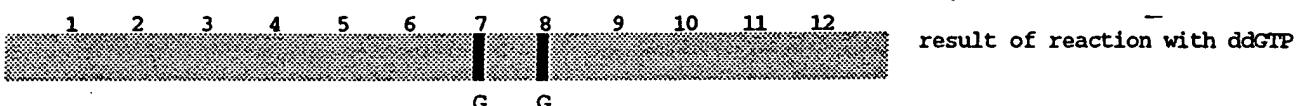
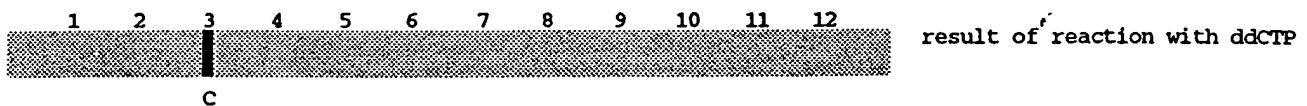
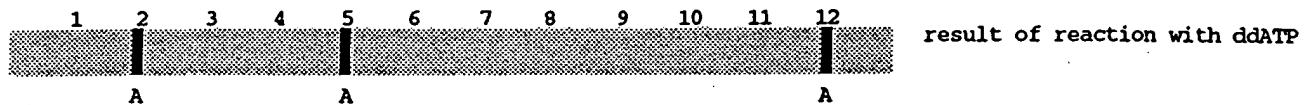
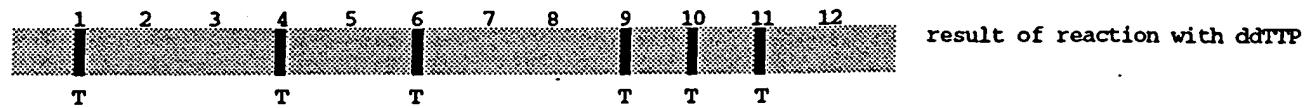


FIG. 15



Results of size separation of detectable products of four ddNTP reactions



summation of ddNTP results into complete base sequence

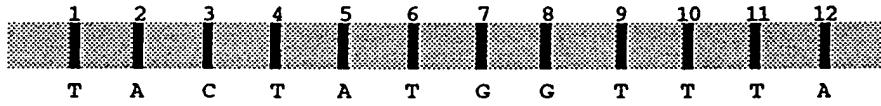


FIG. 16

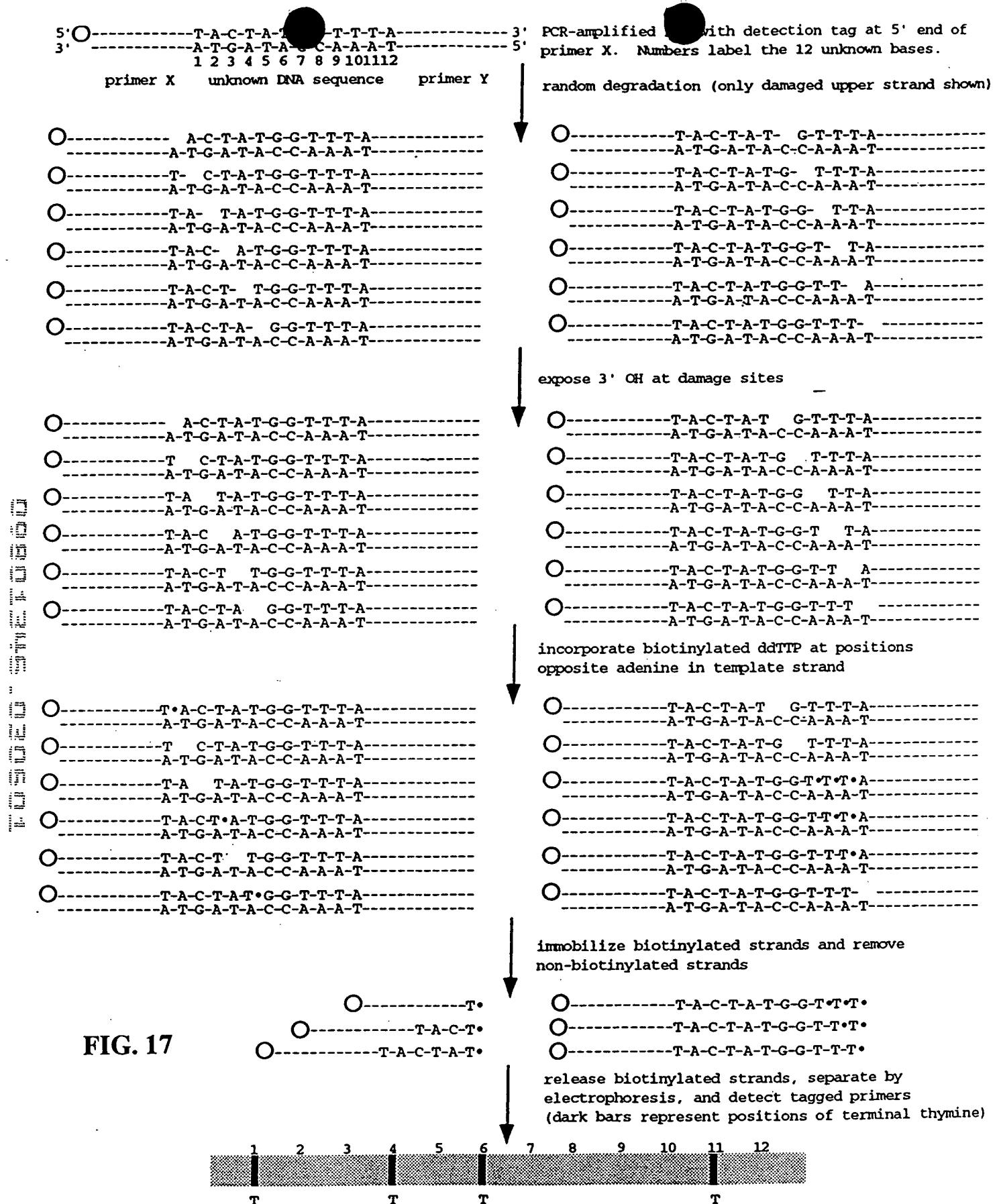
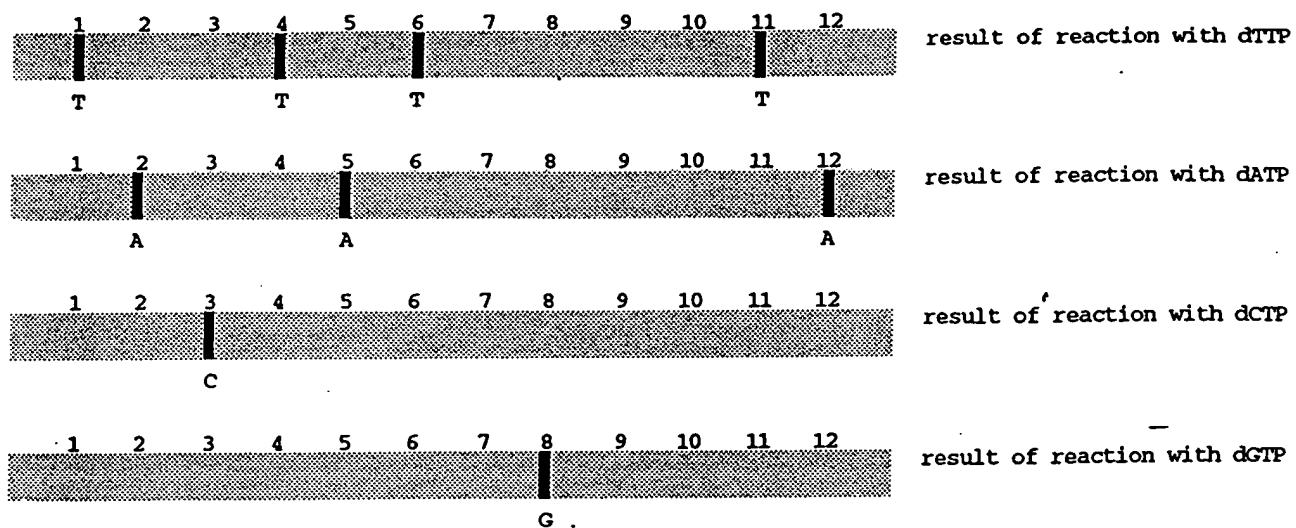


FIG. 17

Results of size separation of detectable products of four dNTP reactions



Summation of dNTP results into complete base sequence
(positions of bases in parentheses are inferred)

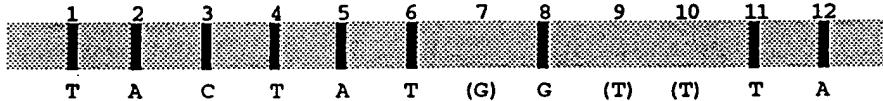


FIG. 18

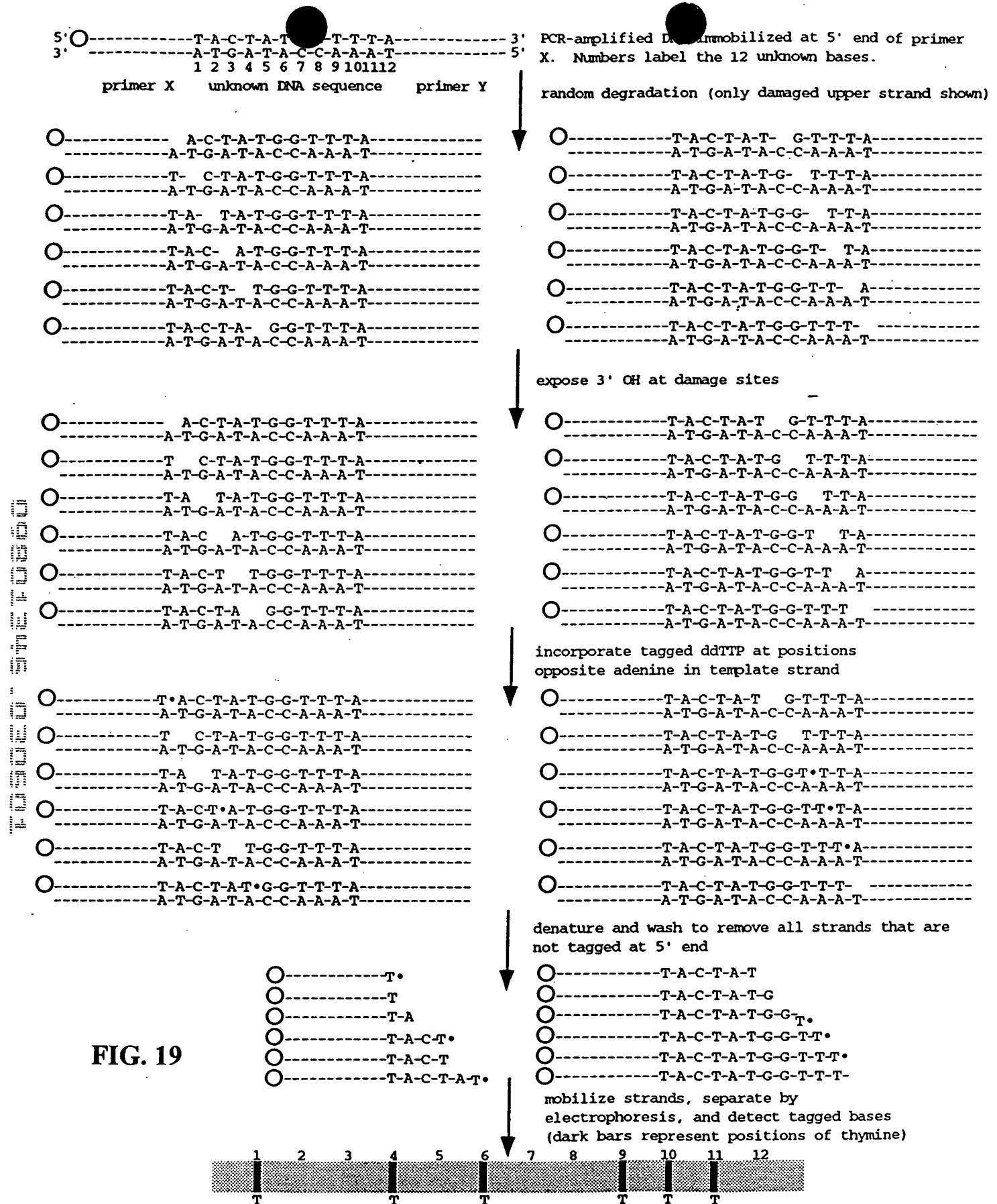
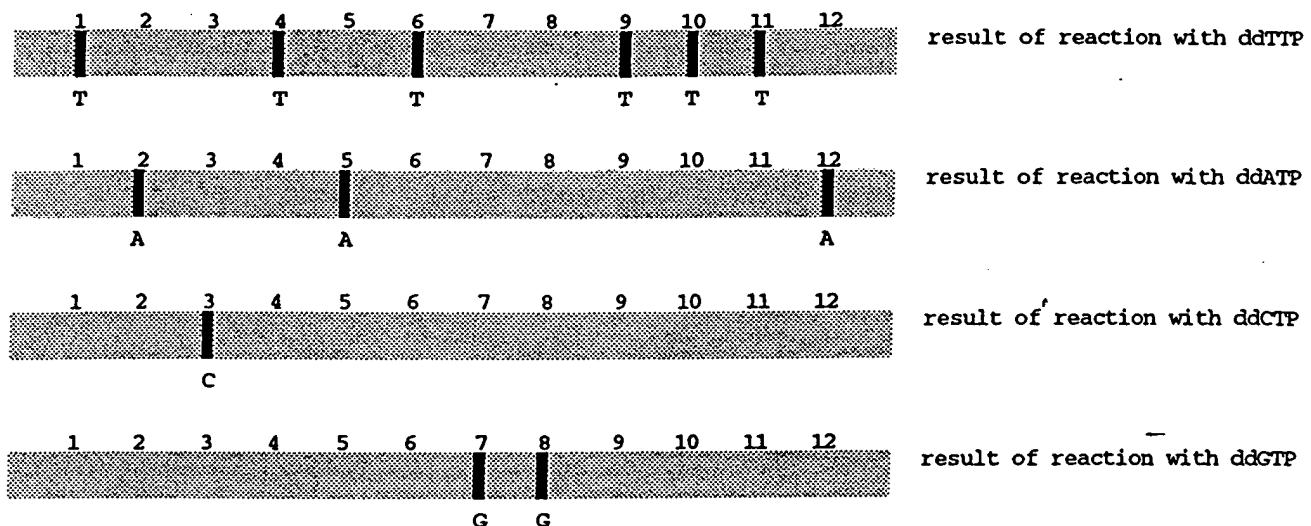


FIG. 19

Results of size separation of detectable products of four ddNTP reactions



summation of ddNTP results into complete base sequence

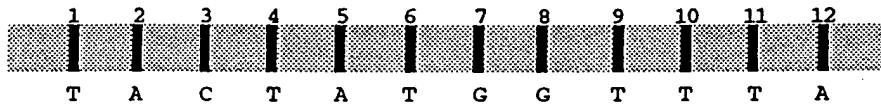


FIG. 20

PCR amplify, immobilize, and expose OH
at random sites as in Fig. 5.

O-----A-C-T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T C-T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----

O-----T A-C-T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A C-T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----

O-----T-A C-T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A C-T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C T-A-T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A T-G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T G-G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----

O-----T-A-C-T-A-T G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T T-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----

Block ends opposite T, G' & C with ddATP, ddGTP, ddCTP
(shown in bold letters), remove ddNTPs, then add dTTP.

O-----T-A-C-T-A-T-G G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----

Block ends opposite A, G & C with ddTTP, ddGTP, ddCTP
(shown in bold letters), remove ddNTPs, then add
tagged ddATP.

O-----T-A-C-T-A-T-G G-T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G T-T-T-A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
-----A-T-G-A-T-A-C-C-A-A-A-T-----

Denature and wash to remove all strands that are
not tagged at 5' end.

O-----T-A-C-T-A-T-G-----
O-----T-A-C-T-A-T-G-G-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----
O-----T-A-C-T-A-T-G-G-T-T-T A-----

Mobilize strands, separate by electrophoresis,
and detect tagged bases (dark bars).

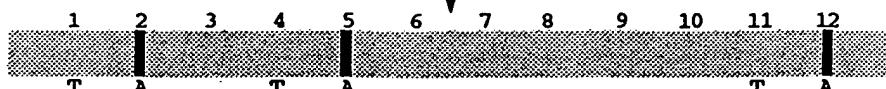
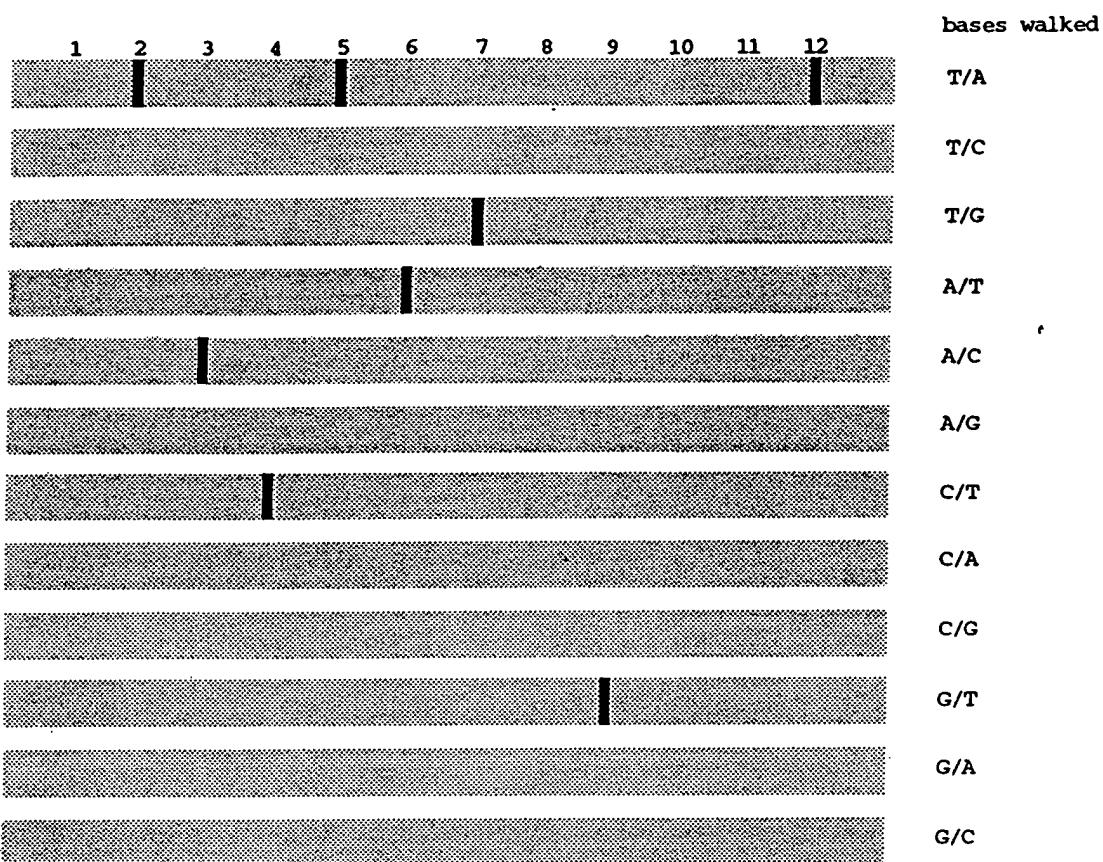


FIG. 21

Size separation of the products of twelve 2-base walk reactions



Assembly of complete sequence from the results of individual reactions
(inferred bases in parentheses)



FIG. 22

PCR amplify, label, and expose 3' OH at random sites (in Fig. 5).

Diagram illustrating the PCR amplification and labeling of DNA strands. The process is shown in four columns of 12 strands each, with arrows indicating the progression of steps:

- Step 1:** Initial PCR products. The first strand is labeled: A-C-T-A-T-G-G-T-T-T-A. Subsequent strands show variations in the 3' ends.
- Step 2:** After labeling and exposure of 3' OH groups at random sites.
- Step 3:** After blocking ends opposite T, G, and C with ddATP, ddGTP, and ddCTP (bolded letters). Removal of ddNTPs and addition of dTTP.
- Step 4:** After blocking ends opposite A, G, and C with ddTTP, ddGTP, and ddCTP (bolded letters). Removal of ddNTPs and addition of dATP.
- Step 5:** After blocking ends opposite T, G, and C with ddATP, ddGTP, and ddCTP (bolded letters). Removal of ddNTPs and addition of tagged ddTTP.

Remove all non-immobilized DNA, then release, size-separate, and detect strands with tagged terminal T.



FIG. 23

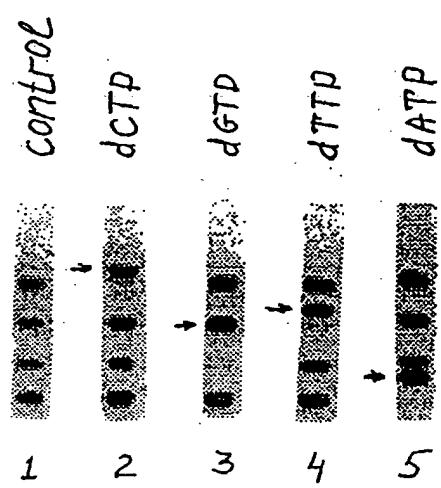


FIG. 24

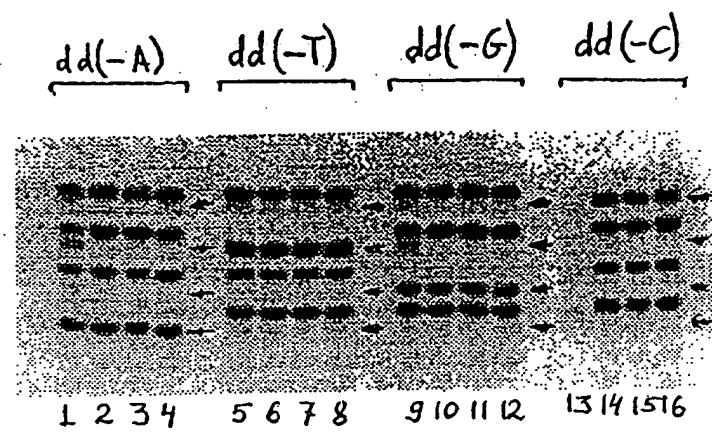
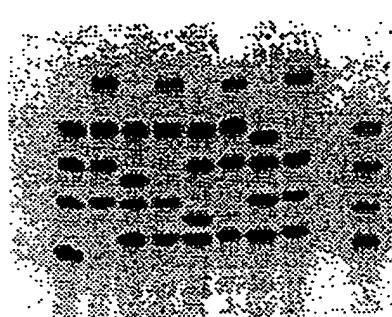


FIG. 25



1 2 3 4 5 6 7 8 9

FIG. 26

Fe/EDTA DNase I

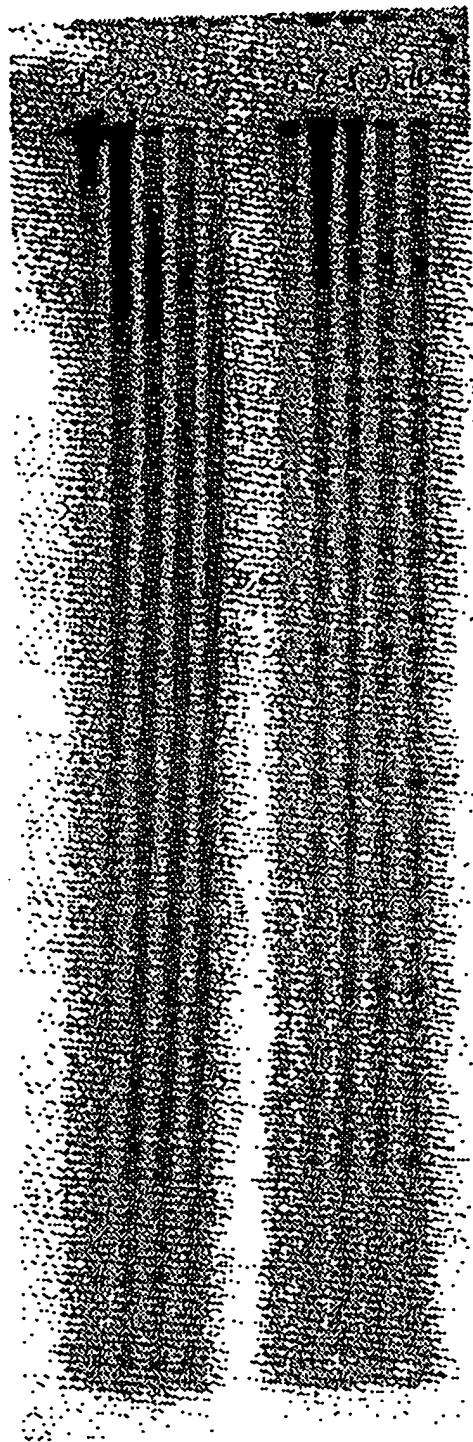
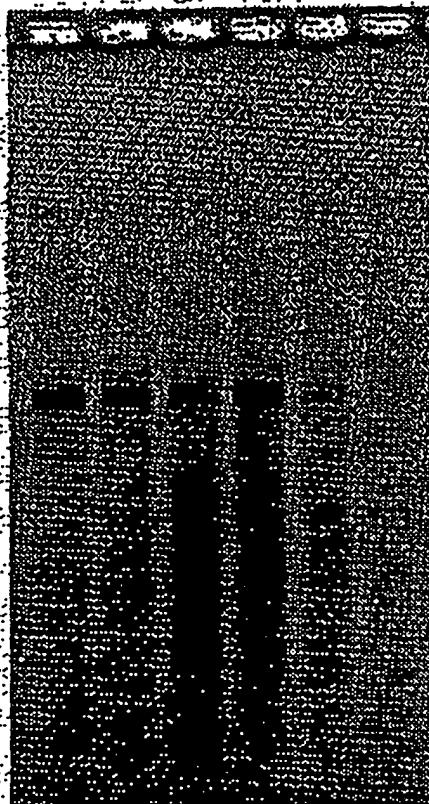


FIG. 27

EtBr staining

1 2 3 4 5 6



^{32}P -dATP

7 8 9 10 11 12



FIG. 28A

FIG. 28B

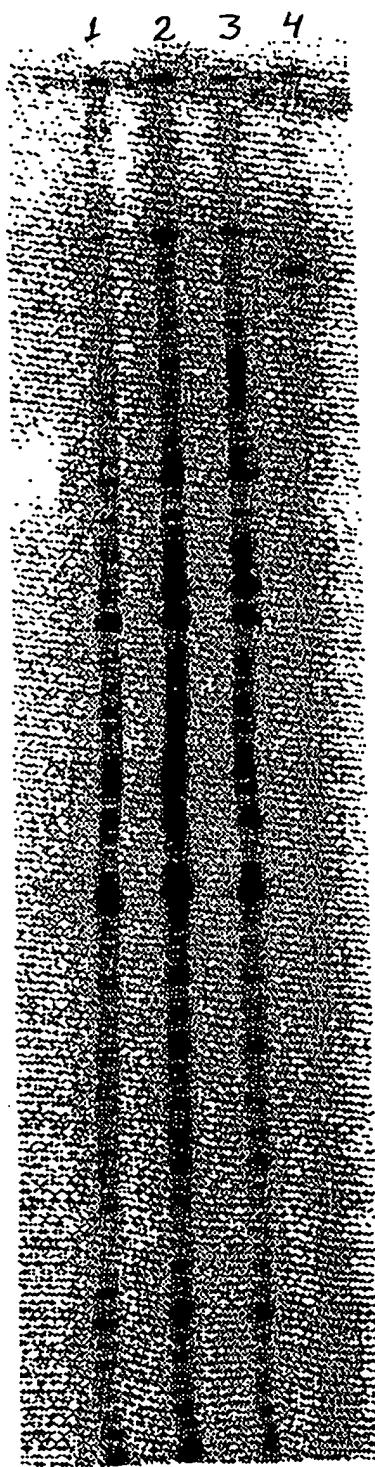
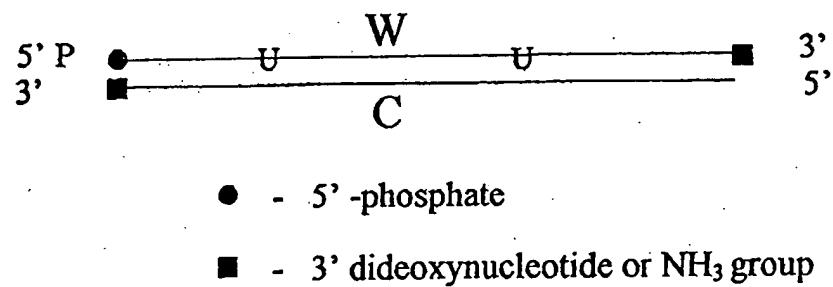


FIG. 29

FIG. 30A



5'	X	3' OH	4 C-X oligos
5'	XY	3' OH	16 C-XY oligos
5'	XYZ	3' OH	64 C-XYZ oligos

X, Y and Z are A, T, G or C

FIG. 30B

Map of the XYZ sites

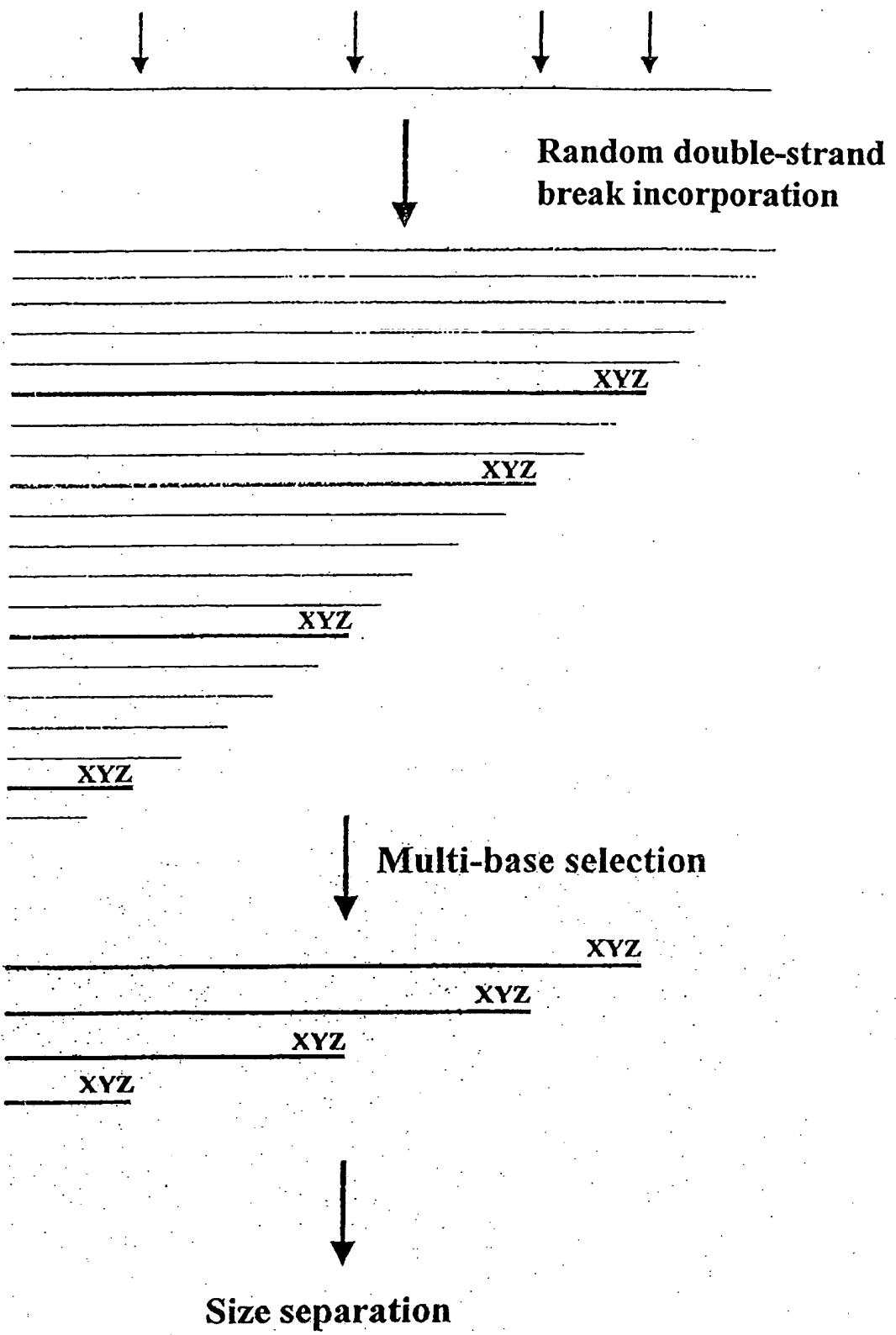


FIG. 31

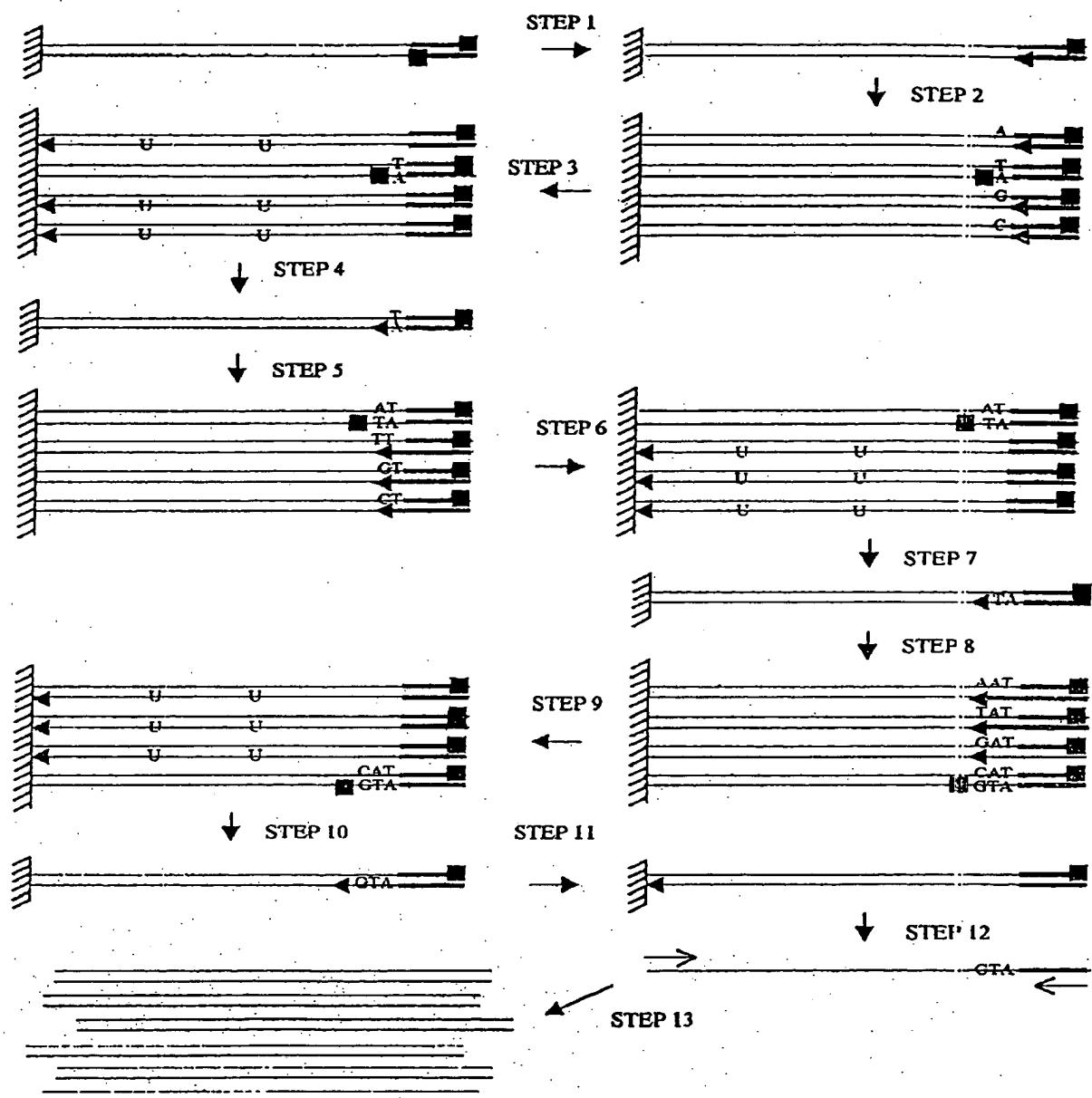


FIG. 32

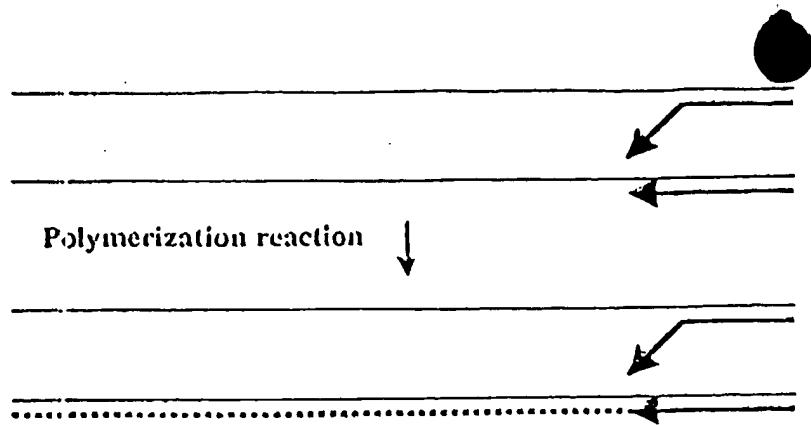
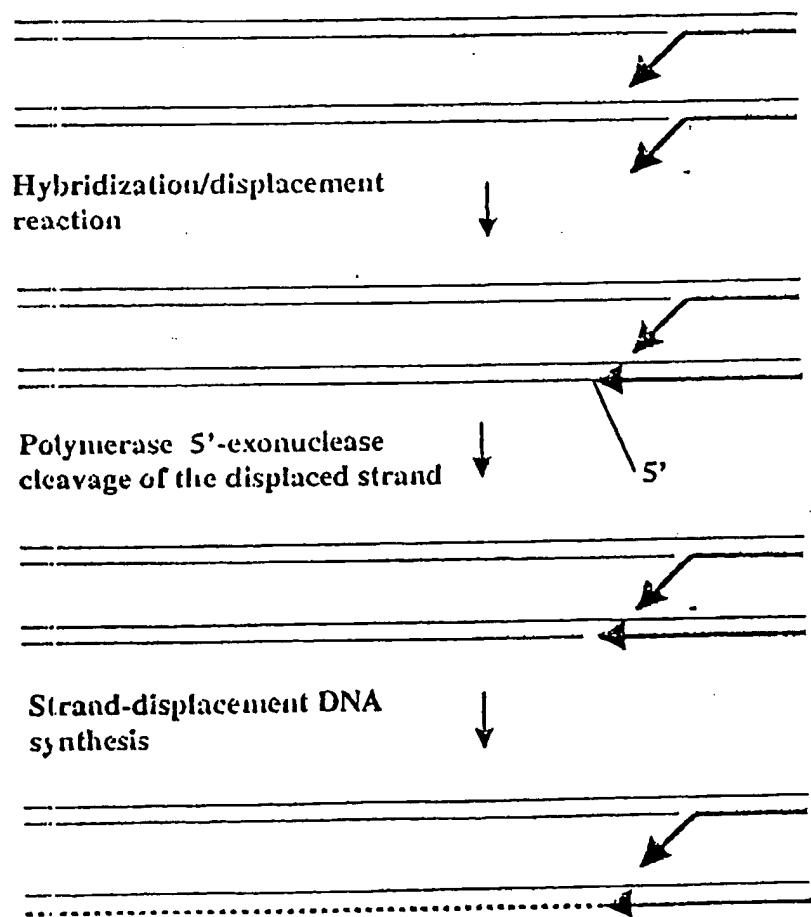


FIG. 33A

Mis-matched primer
Matched primer
Mis-matched primer
Matched primer



Mis-matched primer
Matched primer
Mis-matched primer
Matched primer
Mis-matched primer
Matched primer
Mis-matched primer
Matched primer
Mis-matched primer
Matched primer

FIG. 33B